POTENTIAL OF WHITE OYSTER FROM VARIOUS MEDIA AGRO INDUSTRIAL WASTE

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ABSTRACT

The potential of agro-industrial waste for nurseries media result that waste from lamtoro seeds and cotton seeds can be used as the primary medium. Waste from such as tofu and soy skin can also be utilized as a starter in the culture medium of white oyster nursery. The problems in the second year is how long the shelf life of the nursery and their potential to result in the production of fresh white oyster. The research aims to get a package of manufacturing technology of mains culture media from waste materials and storability of nurseries in a bottle culture and obtain diversity substitute material for the manufacture of white oyster growing medium. The research activity is testing the medium nurseries of material substitution as many as nine compositions by two factors. Factor I (Level 3): Media Growing Seed: corn+bran, corn+skin of soybean, cotton seeds+bran. Factor II: Time Store (3 levels): 0 months, 2 months and 4 months. The conclusion of this study is lamtoro seeds and tofu contamination and dries so it is not recommended. Waste from seed cotton and soybean seed coat can be used as a culture medium of white oyster. The average rate of growth in baglog misellium not significantly different between treatments. The time required to be a body is 4-5 days. The nurseries are derived from corn+bran media provides frequent harvest of fresh white oyster a lot more. Data mushroom production results of the study are as follows: when the body grows fruit is 3.89-4.62 days, the number of fruit bodies is 5.12-6.93 fruits, oyster mushroom hood diameter is 5.89–7.34 cm, weight per harvest is 100.39–116.02 grams, frequency of harvest is 8.32– 13.92 times in 4 months and the total weight of the harvest is 1003.89-1160.23 grams per polybag

Keywords: white oyster nurseries, shelf life, production of fresh white oyster

INTRODUCTION

Nursery is a determining factor of success because of superior nursery that will produce high-quality fruit body and can adapt to environments. Nursery production is one of the sub-farming activities in key positions. The success in producing mushroom nursery also depends on the shelf life of nursery (Wigati Istuti and Siti Nurbana 2006).

Agroindustry waste utilization as a growing medium of oyster mushroom nursery is an attempt to increase the added value of waste (Husen, Santoso, Wahyudi, 2002 and Widiwurjani, Guniarti. 2010). Corn grain used in making nurseries media. Agroindustry waste such as dry leucaena seeds and cotton seeds can also be used as the primary medium. Starter media can be selected from the bran (control), leather soy beans and tofu which is an agro-industrial waste material can also be utilized. All the ingredients are mixed as a growing medium and a nutrient-rich nursery are expected to support growth and to produce quality nursery oyster mushrooms (Widiwurjani, Guniarti, 2015)

METHODOLOGY

Time and Place Research

The research was conducted from March to August 2016. The study was conducted in laboratory tissue culture and in field tests of the Faculty of Agricultural UPN East Java. Phase I is the storage of nursery cultured on various media waste (the result of years of research I) and the second phase is testing the potential of nursery which have undergone the storage period of 0 to 6 months.

The research aims to get a package of manufacturing technology of the parent culture media from waste materials and storability of seeds in culture bottle mains and obtain diversity substitute material for the manufacture of seed oyster mushroom growing medium.

Method

Using a randomized factorial design (RAK) factorial and repeated 3 times with the first factor is the culture medium consists of 3 levels. The second factor is the shelf life of the seeds which consists of three levels. The numbers of combinations treatments are 9 treatments. Treatment more: Factor I : Corn Bran (JB), Skin Corn Soya (JK) and Kapok Seed Rice bran (KB). Factor II: The shelf life of seeds 0 month (LO), 2 months (L2) and 4 months (L4) Observation parameters tested are :

- When the mycelia 100%: the number of days from inoculation until mycelia reaches 100%
- When growing fruit bodies: Number of days from inoculation to grow fruit bodies.
- Fresh weight and total weight of the fruit bodies: Considering the current harvested fruit bodies (gr)

- Number of fruit bodies: Count the number of fruit bodies in each clump.
- Diameter of hood: Measured midline widest hood fruit at harvest.

Nursery storage of research results the previous year had been done and the conditions that occur is in storage within 1 month of the nursery of media corn and pulp, cotton and pulp out to dry and contamination, as well as all the nursery in various media on the storage of 6 months is dry. Therefore, the research turned into a second year of treatment seed storage (0, 2 and 4 months) and the origin of the seeds factor (JB, JK, KB). The combination treatment is JBL0, JBL2, JBL4, JKL0, JKL2, JBL4, KBL0, KBL2 and KBL4.

RESULT AND DISCUSSION

Result

Table 1. Average Percentage Growth of Mycelium In Baglog

Treatment / Time Observations	Mycelium Growth Percentage (%) On week of ….				
	I	II	III	IV	V
JB L0	25.22	45,66	75.33	100.00	100.00
JB L2	25.78	43.99	73.98	100.00	100.00
JB L4	25.66	42.89	72.67	100.00	100.00
JK L0	25.55	44.98	74.67	100.00	100.00
JK L2	20.87	30.51	69.45	89.57	100.00
JK L4	20.66	32.11	70.24	89.23	100.00
KB L0	25.11	44.77	74.56	100.00	100.00
KB L2	22.33	31.44	68.44	88.45	100.00
KB L4	19.56	32.51	68.58	87.99	100.00
BNT	TN	TN	TN	TN	TN

Description: TN: Not Real

Table 2. Average Time Growing Fruit Bodies, Total Weight Of Fruit, Oyster Mushroom Hood Diameter, Weight Per Harvest, And The Total Weight Of The Harvest

Treatment	Average Of White Oyster Mushroom Production Data				
	The first time growing fruit bodies (days)	Number of fruit body	Diameter hood (cm)	The frequency of harvest	Total the harvest weight (g)
JB L0	3.89	6,56	7.20	13.54	1160.23 c
JB L2	4.19	5,98	7.34	13.92	1100.91 bc
JB L4	4.34	6.54	7.10	13.34	1046.78 ab
JK L0	4.31	6.93	7.34	9.23	1097.99 b
JK L2	4.53	5,12	6.22	8.98	1076.44 b
JK L4	4.62	5.45	6.32	8.32	1009.36 ab
KB L0	4.21	6.78	7.02	9.67	1123.43 bc
KB L2	4.31	5.33	5.89	8.97	1032.43 ab
KB L4	4.44	5.22	6.77	8.42	1003.89 a
BNT	TN	TN	TN	TN	70.13

Description: TN: Not Real
The figures were accompanied by the same letters in the same column are not significantly different meaning in the stage of least significant difference test 5%

Table 3. Average weight of fresh oyster mushrooms each harvest and total harvest production

Treatment	Average weight of fresh oyster mushrooms (g) at harvest time for ...										
	I	II	III	IV	V	VI	VII	VIII	IX	X	Total
JB L0	100.44	101.76	95.65	110.45	125.78	128.11	130.55	100.34	92.67	93.65	1160.23
JB L2	97.44	105.37	103.87	109.44	110.67	131.44	133.92	113.56	98.10	97.10	1100.91
JB L4	96.10	99.87	100.54	105.67	110.98	127.23	122.34	107.98	90.30	85.77	1046.78
JK L0	91.45	98.23	104.28	115.56	115.98	133.10	133.67	116.14	94.53	95.05	1097.99
JK L2	89.91	90.54	107.54	108.65	120.65	135.44	135.75	109.50	89.55	88.91	1076.44
JK L4	92.44	90.03	102.67	100.33	116.55	125.45	125.56	105.10	75.45	75.78	1009.36
KB L0	96.49	104.56	107.45	115.87	125.09	130.45	135.23	117.76	95.34	95.19	1123.43
KB L2	88.54	97.99	103.10	105.22	110.78	114.68	120.43	110.78	90.24	90.67	1032.43
KB L4	89.99	93.37	105.98	105.76	116.65	120.99	116.03	92.22	82.34	80.56	1003.89
BNT	TN	TN	TN	TN	23.23	22.92	20.14	28.95	TN	TN	TN

Description: TN: Not Real
The figures were accompanied by the same letters in the same column are not significantly different meaning in the stage of least significant difference test 5%

B. Discussion

Based on the observed data of the above it can be explained that the seedlings were grown in medium + corn + tofu and cotton tofu was not able to be saved because it has undergone contamination. This shows that the media mix with

pulp is more easily contaminated because the atmosphere is more acidic media (Ira Wijaya, 2011). Tofu protein content is also higher and so the risk of contamination is also higher. Tofu and soy beans have a better ability to support the growth of oyster mushroom seeds. The content of nutrients that exist in the tofu waste is 26.6 grams protein (Herdiyana 2012). Soybean seeds: crude protein 11.0%, 61.0% cell wall, hemi cellulose 16.0%, 42.0% cellulose, lignin 2.0%.

Mycelium can grow well and not significantly different from the control (corn and bran without storage). Mycelium growth speed in fulfilling baglog takes 4-5 weeks. The time appearance of the first fruits in various treatments did not show significant differences. This show the potential seeds of various media waste with a shelf life of up to 4 months were still able to produce fresh mushrooms such as the control treatment. Kapok seed capable of providing seedlings grow oyster mushrooms. The nutritional content of cotton seeds containing 32.7% crude protein and crude fiber 16.7%. Furthermore Skin cotton seeds also contain 3-8% cotton limt in the form of cellulose that is easy to digest. Nutritional content of cotton skin is 4.1% crude protein and crude fiber 47.8%.

Media derived from the seeds lamtoro less able to support the growth of seedlings in a long time so it does not hold up when experiencing storage. This is indicated by the presence of high levels of contamination as well as the media mongering. It is suspected that the seed lamtoro unable to retain water so the humidity increasingly declining and seeds do not last long. Furthermore Godam (2012) explains that the seed leuceana contains.

When appeared to be a mushroom fruit body's average takes 4-5 days for each treatment. Nurseries are derived from corn + bran provides faster growth. It can be seen from the frequency of harvesting more in the same time. Allegedly nursery of oyster mashroom that grows on media maize + bran healthier because the nutrients more available nutrient that can be obtained mushroom seeds which grow rapidly and can readily inoculated to bag log (Henky et al, 2003, Yanti Hamdiyati, Kusnadi, Yulianti Slamet. 2006). Furthermore Widiwurjani and Ida Retno (2007), Muji Rahayu (2008) and Pradita Kirana (2012) says that for modification of media grow fungus, it can be done by reducing the portion of corn, and can be coupled with banana leaves, kiambang or biji2 another contains protein (soybean, bean, cake, tofu and tempeh dregs) and the addition of nutrients in the form of NPK fertilizer which can also be thawed from liquid Leucaena, Thitonia well as other ingredients that is rich in nutrients.

CONCLUSION

Based on the results of the study it can be concluded that

1. Seed that came from the culture medium lamtoro bean waste, cotton and soybean skin can be stored up to 4 months.
2. Seed derived from the culture medium and the waste has been stored four months can grow well on media baglog
3. They are derived from the culture medium and the waste has been stored four months were able to provide production of mushrooms that were not significantly different from the seed corn and rice bran medium (control)
4. The BER (Biological Efficiency Ratio fungus) more than 75% achieved at week by week IV and V all treatment has reached 100%
5. Data mushroom production results of the study are as follows: when the body grows fruit is 3.89 - 4.62 days, the number of fruit bodies is 5.12 - 6.93 fruits, oyster mushroom hood diameter is 5.89 – 7.34 cm, weight per harvest is 100.39 – 116.02 grams, frequency of harvest is 8.32 – 13.92 times in 4 months and the total weight of the harvest is 1003.89 - 1160.23 grams per polybag

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